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Nematodes

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Down Under

Pyramiding Cereal Cyst Nematode Resistance genes *Cre5* and *Cre6* to Improve Resistance in Bread Wheat

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The cereal cyst nematode (CCN) (*Heterodera avenae* Woll.) is an important disease in many wheat-growing regions of the world. Until recently variability for resistance to CCN was limited within bread wheat. Consequently wide crosses between wheat and wheat relatives were made to increase genetic diversity for resistance genes against CCN within wheat. Amongst the wild relatives, *Aegilops ventricosa* has been found to be resistant to CCN. Bread wheat lines introgressed with *Aegilops ventricosa* chromosomes confer varying levels of resistance to CCN pathotypes. The *Cre6* on chromosome $5N^v$ confers a high level of resistance to pathotype *Ha13* and partial resistance to pathotypes *Ha12* and *Ha41*, while *Cre5,* on chromosome $6N^v$ displays partial resistance to the CCN pathotypes *Ha12*, *Ha13* and *Ha41*. The aims of this study were to develop wheat germplasm containing both *Cre5* and *Cre6* and to evaluate its resistance to CCN pathotypes *Ha41*, *Ha12* and *Ha13*. The results suggest that bread wheat *Ae. ventricosa* introgression lines with a combination of both genes (*Cre5* and *Cre6*) expressed significantly better resistance to the three pathotypes – *Ha12*, *Ha13* and *Ha41* than bread wheat *Ae. ventricosa* lines with either *Cre5* and *Cre6* alone.

Nematode Susceptibility in New Synthetic Banana Hybrids of *Musa acuminata* Resistant against *Mycosphaerella* Leaf Spot Diseases

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Host status of Yellow Sigatoka and Black Leaf Streak disease resistant new hybrids from Cirad, (cvs 916, 918, 919, 920, 921 and 924) to the burrowing nematode *Radopholus similis* and to the lesion nematode *Pratylenchus coffeae* were assessed under controlled conditions in a growth chamber on andosol, at 24-28°C and 80% RH. Banana plants produced by tissue culture were allowed to acclimate and grow for 6 weeks prior to inoculation. Susceptibility to nematodes was evaluated by inoculating the hybrid plants with 400 nematodes per plant. Forty-five days after inoculation, the nematodes were extracted from the entire root system carefully collected and weighted separately. Two cvs of Grande Naine (*Musa* AAA, Cavendish subgroup, ITC1256 and cv902) and one cv of Yangambi Km5 (*Musa* AAA, Ibota subgroup, ITC1123) were used as susceptible and resistant controls, respectively. Results on reproductive factors (Rfs) and root infestations showed that three of these hybrids (cvs 918, 919, 924) were not different from the resistant control Yangambi Km5 with a lower reproduction of *R. similis*. Similarly, four of these hybrids (cvs 918, 919, 920, 924) showed a lower multiplication of *P. coffeae*, not different from the resistant control. These preliminary results are indicatives of a partial resistance of cvs 918, 919 and 924 to both nematodes, adding an important extra value to these hybrids, formerly breed to resist to *Mycosphaerella* leaf spot diseases.